



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/601,600	06/24/2003	Oscar David Labrana Valdivia	09239.0001	1500

7590 07/19/2004

Finnegan, Henderson, Farabow,
Garrett & Dunner, L.L.P.
1300 I Street, N.W.
Washington, DC 20005-3315

EXAMINER

HERTZOG, ARDITH E

ART UNIT PAPER NUMBER

1754

DATE MAILED: 07/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/601,600

Applicant(s)

LABRANA VALDIVIA ET AL.

Examiner

Ardith E. Hertzog

Art Unit

1754

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2004.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-3 is/are rejected.
7) ☒ Claim(s) 4-26 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 24 June 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date Jan 30, 2004.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. § 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. Receipt is hereby acknowledged of the information disclosure statement, filed January 30, 2004. As the submission is in compliance with the provisions of 37 CFR § 1.97, the information disclosure statement has been considered, in accordance with the enclosed PTO-1449.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR § 1.84(p)(4), because:
 - a. Reference character 2 has been used to designate **both** "the feed tank (2)" (Fig. 1 and Fig. 4) **and** "the feed sulfur (2)" (Fig. 1 (as described at p. 7, second full paragraph));
 - b. Reference character 5 has been used to designate: "a standard fluid pump (5)" (Fig. 1 and Fig. 4); "AZUFRE" (Fig. 2 (see related objection in paragraph 6. below)); **and** "(liquid) sulfur entrance (5)" (Fig. 3);
 - c. Reference character 6 has been used to designate **both** "back entrance (6)" (Fig. 2) **and** "primary gas' (6)" (Fig. 2);
 - d. Reference character 15 has been used to designate **both** "the cooling

Art Unit: 1754

plant (15)" (Fig. 1) **and** "compression (unit) (15)" (Fig. 4); **and**

e. Reference character 17 has been used to designate: "the SO₂ return (17)" (Fig. 1 - Fig. 4); "the flow sensor (17)" (Fig. 2); **and** "the O₂ analyzer (17)" (Fig. 2).

4. The drawings are objected to as failing to comply with 37 CFR §1.84(p)(5), because they do not **appear** to include the following reference characters in Figure 2, as mentioned in the description:

- a. "a proportional valve FV-07";
- b. "the flow meter 05";
- c. "the control valve 05";
- d. "the flow meter 09"; **and**
- e. "the control valve 09" (all as discussed at page 10).

(It is respectfully noted that the word "appear" has been used in this objection, given that the details on Figure 2 are so small as to be barely legible (see related objection in paragraph 7. below).)

5. The drawings are **further** objected to as failing to comply with 37 CFR § 1.84(p)(5), because they **appear** to include the following reference characters/symbols in Figure 2, which are not mentioned in the description:

- a. "SP";
- b. "FFIC 09";
- c. "M";
- d. "FIC 05";
- e. "AS";

- f. "FY 05";
- g. "FY 09";
- h. "FV 09";
- i. FQI 09"; **and**
- j. "FQI 17".

(Here as well, it is respectfully noted that the word "appear" has been used in this objection, given that the details on Figure 2 are so small as to be barely legible (see related objection in paragraph 7. below).)

6. The drawings are **also** objected to, because the words in Figure 2 have not been translated into English (i.e., those for reference characters 5, 9 and 17).

7. **Lastly**, the drawings are **also** objected to, in accordance with the enclosed PTO-948.

8. **Corrected drawing sheets, with amendment to the specification if/as necessary, are required in reply to this Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended". If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the**

renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR § 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. Any objection to the drawings will not be held in abeyance.

Claim Objections

9. Claims 4-26 are objected to under 37 CFR § 1.75(c) as being in improper form, because a multiple dependent claim (MDC): 1) must refer to other claims in the alternative only, and 2) may not serve as basis for any other MDC. See MPEP § 608.01(n). Note that MDC's 4, 6, 9, 12, 13, 17, 19, 21 and 23 do not refer to other claims in the alternative only; note also that MDC's 6, 9, 12, 13, 17-19, 21 and 23 at least indirectly depend upon at least one other MDC. Further note that claims 5, 7, 8, 10, 11, 14-16, 20, 22 and 24-26 are correspondingly improper, since they depend upon at least one of the improper MDC's. **Accordingly, as the intended scope of claims 4-26 cannot be accurately determined, they have not been further treated on the merits.**

Minor Informalities

10. The disclosure is objected to, because of the following minor informalities:
 - a. On page 1, in the first line of the third paragraph, "Schendek" should apparently be "Schendel".
 - b. On page 3, it is suggested that "JP Patent 26011" be revised as "JP

Patent 5802611", for clarity.

c. **Similarly**, on page 3, it is suggested that "JP Patent 309707" be revised as "JP Patent 09-309707", for clarity.

d. On page 5, in the first paragraph, **each** occurrence of "figure" should be "Figure" (four total).

e. On page 5, in the first line of the third paragraph, "figures" should be "Figures".

f. On page 5, at lines 3 - 4 of the third paragraph, it is suggested that "multistep" be inserted between "heat" and "exchanger", for clarity, as well as consistency with the rest of the disclosure (compare p. 7, the second line of the second full paragraph).

g. **Similarly**, on page 5, at line 6 of the third paragraph, it is suggested that "heat" be inserted before "multistep exchanger", for clarity, as well as consistency with the rest of the disclosure (compare p. 7, the second line of the second full paragraph).

h. On page 6, in the second line of the first paragraph, it is suggested that "atomizer" be revised as "burner", for consistency with the rest of the disclosure.

i. **Also** on page 6, in the second line of the first paragraph, "figure" should be "Figure".

j. On page 7, in the first line of the first full paragraph, it is suggested that "inner" be deleted, for consistency with the rest of the disclosure.

Art Unit: 1754

- k. On page 7, in the second line of the second full paragraph, "figure" should be "Figure".
- l. On page 7, in the ~~third~~ line of the second full paragraph, "one" should be "tank", for consistency with the rest of the disclosure.
- m. On page 7, in the second line of the last full paragraph, it appears that "tank" or "supply" should be added to "concentrated 98% H₂SO₄ (13)".
- n. On page 8, in the fourth line of the fourth paragraph, "figure" should be "Figure".
- o. On page 10, in the first line of the first full paragraph, "figure" should be "Figure".
- p. On page 10, in the fourth line of the second full paragraph, "wit" should be "with".
- q. On page 12, in the second line of the first paragraph, "ang" should be "and".
- r. "While there is no set statutory form for claims, the present Office practice is to insist that each claim must be the object of a sentence starting with 'I (or we) claim,' 'The invention claimed is' (or the equivalent)" (see MPEP § 608.01(m)).
- s. In **each** of claims 1-3, it is suggested that "CHARACTERIZED" be revised as "characterized", for clarity.
- t. In claim 1, at line 2, it is suggested that "it" be revised as "said production", for clarity.
- u. In each of **dependent** claims 2 and 3, it is suggested that "A" be revised

as "The", for clarity and consistency.

Appropriate correction of all the above is required.

Claim Rejections - 35 U.S.C. § 112

11. The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claims 1-3 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Said claims are considered vague, indefinite, and/or confusing, due to the relative term "completely" in the independent claim 1 (upon which claims 2 and 3 depend). It is respectfully submitted that as the term "completely" is not defined by claim 1, and the specification does not appear to provide a standard for ascertaining the requisite degree of "completeness/completion", one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Therefore, it is respectfully submitted that the intended scope of the phrase "completely regulated", as recited in claim 1, cannot be accurately determined, and thus the metes and bounds of the claims are unclear—**especially** as no specific components to be regulated are recited in claim 1. That is, how many components of the "combustion system"—and thus to what degree do each of same need to be "regulated"—in order to comprise applicant's "completely regulated combustion system"? Appropriate correction is required.

13. Claims 2 and 3 are **further** rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject

matter which applicant regards as the invention. Said claims are considered **further** vague, indefinite, and/or confusing, due to antecedent basis problems. Specifically, the independent claim 1 fails to provide adequate antecedent basis for “the reactants” and “the sulfur oxidation” recited in claim 2, **as well as** “the sulfur combustion chamber” and “the return SO₂” recited in claim 3. Appropriate correction is required.

Claim Rejections - 35 U.S.C. § 102

14. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

15. Claims 1-3 are rejected under 35 U.S.C. § 102(b) as being anticipated by Guth et al. (US 3,803,298). Guth et al. teach processes for the continuous production of high purity sulfur dioxide by the combustion of sulfur with oxygen (see col. 1, lines 21-23). “A portion of the sulfur dioxide is recycled to the first combustion stage to moderate the temperature therein” (see abstract), thus Guth et al. **clearly** teach “that the SO₂ is used as cooling and diluent agent of the reactants and comprises a fraction of the SO₂ produced in the sulfur oxidation”, as recited in instant claim 2. **Accordingly**, Guth et al. **also** teach the “production of pure SO₂ from elemental sulfur and oxygen in the presence of SO₂”, as broadly recited in instant claim 1. **Furthermore**, as the Guth et al. processes are not performed by hand—they utilize burners, furnaces, waste heat boilers, apparent temperature control within the various cooling zones, as well as, again, “controlling the combustion temperature” via the SO₂ recycle (see Example in

col. 5, especially lines 51-54)—they may be considered not only “automated”, but also “completely regulated combustion system[s]”, as broadly recited in instant claim 1.

Lastly, as Guth et al. **clearly** teach the use of “return SO₂” “into the sulfur combustion chamber”, as recited in instant claim 3, the step of “oxygen not consumed during the combustion... [being] re-entered into the sulfur combustion chamber together with the return SO₂”, as recited in instant claim 3, must **also** be **inherently** taught by Guth et al., since, as acknowledged by applicant, such “SO₂ return... [will] contain... oxygen non consumed from previous oxidation” (see instant p. 6, second full paragraph). In other words, given that no chemical reaction goes to 100% completion, it may be readily assumed that at least some of the oxygen reactant will remain after combustion with the sulfur reactant to form the product SO₂. **Therefore**, Guth et al. anticipate applicant’s claims 1-3, since processes which, **at least inherently**, meet all material limitations thereof are **clearly** disclosed.

16. Claim 1 is rejected under 35 U.S.C. § 102(b) as being anticipated by Chatelain et al. (US 2,310,173). Chatelain et al. teach methods and apparatuses for providing a controlled supply of sulphur combustion gases, wherein “sulphur dioxide of high consistency” is produced (see p. 1, col. 1, lines 1-5, & col. 2, lines 10-14), by reaction of sulphur and air (see Example 1 on p. 4). **Thus**, since air comprises oxygen, **and** since the combustion of sulphur with air does not occur instantaneously and/or completely (meaning that the sulfur and air (O₂) reactants will, at least for a time, co-exist with the SO₂ combustion product), Chatelain et al. **clearly** teach the “production of pure SO₂ from elemental sulfur and oxygen in the presence of SO₂”, as broadly recited in instant

claim 1. **Furthermore**, as Chatelain et al. teach not only "[a]utomatic operation of the system" (p. 2, col. 2, line 6), but also the use of "a metering device which regulates the supply of combustion supporting gases in direct proportion to the volume of liquid or other material being treated" (p. 3, col. 2, lines 54-57), the corresponding methods may be considered not only "automated", but also "completely regulated combustion system[s]", as broadly recited in instant claim 1. **Therefore**, Chatelain et al. anticipate applicant's claim 1, since methods meeting all material limitations thereof are **clearly** disclosed.

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. These references are considered cumulative to or less material than those discussed above, the majority directed towards sulfur dioxide production processes that are "automated" and/or "regulated" in various ways. Though ultimately directed towards the production of sulfur trioxide, the additional Guth et al. and Battles et al. patents have been cited merely as of interest, since of the same inventive entity as the patent applied above, and of some of the same inventors as the Battles et al. patent cited on the enclosed PTO-1449.


18. Any inquiry concerning this communication should be directed to Ardith E. Hertzog at telephone number (571) 272-1347. The examiner can normally be reached on Monday through Friday (from about 8:30 a.m. - 4:30 p.m.).


19. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley S. Silverman, can be reached at (571) 272-1358.

Art Unit: 1754

20. The fax phone number for the organization where this application is assigned is 703-872-9306.

21. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. For any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


AEH
July 9, 2004


STANLEY S. SILVERMAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700